

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

21. (Currently Amended) A two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection, comprising:

- a) a slab-shaped body;
- b) plural modified refractive index areas arranged periodically in the body, each having a refractive index different from that of the body;
- c) a waveguide formed by creating defects of the modified refractive index areas in a linear arrangement, the end of which is located on an end of the body;
- d) a point-like defect formed by creating a defect of modified refractive index area or areas in the vicinity of the waveguide; and
- e) a first reflecting section provided at an end of the waveguide, ~~and reflecting at least part of light with the resonant wavelength of the point-like defect~~ for reflecting light having wavelength equal to the resonant wavelength of the point-like defect by connecting another two-dimensional photonic crystal not transmitting light with the wavelength to the end of the body.

22-24 (Cancelled)

25. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 21, wherein the distance between the first reflecting section and the point-like defect is set so that the phase difference between light ~~with~~ having wavelength equal to the resonant wavelength of the point-like defect and reflected on the point-like defect, and light with the same wavelength passing over the point-like defect and reflected on the first reflecting section is π .

26. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 21, wherein the distance between the first reflecting section and the point-like defect is set so that the phase difference between light ~~with~~ having wavelength equal to the resonant wavelength of the point-like defect and introduced into the waveguide from this point-like defect, and light with the same wavelength and reflected on the first reflecting section is 0.

27. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according claim 21, wherein a second reflecting section reflecting at least part of light ~~with~~ having wavelength equal to the resonant wavelength is formed at the end of the waveguide opposite to the first reflecting section.

28. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 27, wherein the distance between the second reflecting section and the point-like defect is set so that the phase difference between light with the resonant wavelength in the point-like defect and introduced from the second reflecting section side, and light ~~with~~ having wavelength equal to the same wavelength, introduced from the second reflecting section, reflected on the point-like defect, and further reflected on the second reflecting section is 0.

29. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 21, wherein light ~~with~~ having wavelength equal to the resonant wavelength of the point-like defect is totally reflected on the first reflecting section, and the ratio Q_p/Q_v is set in the range of 1.4 to 2.8 where Q_p is the coupling coefficient between the point-like defect and the waveguide, and Q_v is the coupling coefficient between the point-like defect and the air.

30. (Previously Presented) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 29, wherein the ratio of Q_p/Q_v is set to 2.

31. (Currently Amended) A two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection, comprising:

- a) a slab-shaped body;
- b) two or more forbidden band zones provided in the body;
- c) plural modified refractive index areas provided in each of the forbidden band zones, each area having a refractive index different from that of the body, and periodically arranged in the body in a different cycle distance from each other in each of the forbidden band zones; and

- d) a waveguide formed by creating defects of modified refractive index areas in a linear arrangement in the respective forbidden band zones, and passing through all the forbidden band zones;

- e) a point-like defect created in the vicinity of the waveguide in each of the forbidden band zones; and

- ~~f) a first reflecting section provided at an end of the waveguide, and reflecting at least part of light with the resonant wavelength of the point-like defect,~~

wherein,

- ~~gf) a part of a waveguide-transmittable wavelength band in each of the forbidden band zone is not included in a waveguide-transmittable wavelength band of all forbidden band zones present on the one side of the first reflecting section from the forbidden band zone, but included in the waveguide-transmittable wavelength band of all forbidden band zones present on the other side opposite to the first reflecting section from of the forbidden band zone; and~~

hg) the resonant wavelength of the point-like defect created in each of the forbidden band zones is included in the part of the transmission wavelength band.

32. (Previously Presented) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 31, wherein the point-like defect is a linear donor-type cluster defect formed by rendering three adjacent modified refractive index areas defective.

33-34 (Cancelled)

35. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim ~~33~~31, wherein the end of the waveguide of said one side is located on an end of the body, and another two-dimensional photonic crystal not transmitting light ~~with~~having wavelength equal to the resonant wavelength of the point-like defect is connected to the end of the body.

36. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 31, wherein, ~~in the forbidden band zones except the forbidden band zone to which the first reflecting section belongs,~~ the distance between the boundary with ~~an~~the adjacent forbidden band zone on ~~the first reflecting section~~said one side and the point-like defect provided in that forbidden band zone is set so that the phase difference between light ~~with~~having wavelength equal to the resonant wavelength of the point-like defect of the forbidden band zone and reflected on the point-like defect, and light with the same wavelength passing over the point-like defect and reflected on the boundary between the forbidden band zones ~~or the first reflecting section is π ;~~ and wherein, ~~in the forbidden band zone to which the first reflecting section belongs,~~ the distance ~~along the waveguide between the first reflecting section and the point-like defect provided in this forbidden band zone is set so that the phase difference between light with the resonant wavelength of the point-like defect of the forbidden band zone and reflected on this~~

~~point-like defect, and light with the same wavelength, passing over the point-like defect, and reflected on the boundary between the forbidden band zones or the first reflecting section, is π .~~

37. (Currently Amended) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 31, wherein ~~in the forbidden band zones except the forbidden band zone to which the first reflecting section belongs,~~ the distance between the boundary with ~~an~~ the adjacent forbidden band zone on the ~~first reflecting section~~ said one side and the point-like defect provided in that forbidden band zone is set so that the phase difference between light with the resonant wavelength of the point-like defect of the forbidden band zone, and introduced into the waveguide from this point-like defect, and light with the same wavelength and reflected on the boundary between the forbidden band zones ~~or the first reflecting section,~~ is 0; and wherein, ~~in the forbidden band zone to which the first reflecting section belongs,~~ the distance in the length of the waveguide direction between the first reflecting section and the point-like defect provided in a forbidden band zone is set so that the phase difference between light with the resonant wavelength of the point-like defect of the forbidden band zone, and introduced into the waveguide from this point-like defect, and light with the same wavelength and reflected on the boundary between the forbidden band zones ~~or the first reflecting section,~~ is 0.

38. (Previously Presented) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 31, wherein the ratio Q_p/Q_v is set in the range of 1.4 to 2.8, where Q_p is a coupling coefficient between the point-like defect and the waveguide in each of the forbidden band zones and Q_v is a coupling coefficient between the point-like defect and the air.

39. (Previously Presented) The two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection according to claim 38, wherein the ratio of Q_p/Q_v is set to 2.

40. (Cancelled)